OJJDP FACT SHEET

Statistical Approaches to Assessing Risk

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Risk scales are used to classify juveniles in the justice system

Risk scales are statistical tools that help decisionmakers classify juveniles on the basis of expected behavior. The juvenile justice system commonly uses risk scales to predict a juvenile's potential for recidivism or for successful program completion. Numerous factors (i.e., pieces of information) are incorporated into risk scales, and they vary based on the population of juveniles to be classified and the methods used to develop the scale. Much research has been done to identify the risk and protective factors that should be incorporated into these scales. However, given the limited capabilities of existing risk scales, it is clear that further research is needed to uncover additional indicators of successful outcomes and to assess different methods of scale development.

Technicians create risk scales from data

After a set of predictive factors is identified, either through examining research or by tapping the expertise of experienced professionals, decisionmakers (or, more precisely, their technical staff) must decide how to combine these data into a score or risk category that predicts future behavior. Over the years, many statistical methods have been used to prepare risk scales. Technicians, who can select from a set of possible data-reduction techniques, may consider the following questions: Which technique is the most appropriate for the current situation? What are its strengths and weaknesses? Are the results dependent on the method selected? After answering these questions, technicians can then process the raw data through a series of statistical procedures and create a straightforward paper-and-pencil instrument that line staff can use to reliably divide a population of juveniles into subgroups that have different risk potentials. A better understanding of the predictive capabilities of various statistical approaches to risk scaling should help technicians create more effective risk classification systems.

A new OJJDP Report provides technicians with a statistical guide for preparing risk scales

Risk Classification: A Comparison of Methods for Practical Application in Juvenile Courts, a new Report from the Office of Juvenile Justice and Delinquency Prevention (OJJDP), details and compares the processes for implementing a number of the most commonly used statistical approaches in risk scaling. To help technicians develop and use instruments to classify juveniles into a small number of risk groups, the Report shows step-by-step procedures for developing a risk scale using several different statistical methods: a simple method without different weightings of the predictive items, multiple linear regression, discriminant analysis, logistic regression, and predictive attribute analysis.

Different statistical techniques were applied to a common data set

For the Report, the authors constructed a data set from the automated records housed in the National Juvenile Court Data Archive that held risk and criterion (outcome) information commonly available in most jurisdictions. The data file captured the court careers of 9,476 juveniles who had been referred to juvenile court in a given calendar year and were between ages 8 and 15 at the time of referral. In addition, the data file recorded whether the juvenile had recidivated within 2 years of the referral date.

The authors show how they applied each statistical method to a random portion of this data set (the construction sample) to produce an instrument that divided the referred juveniles into five recidivism risk categories. The validity of each resulting risk instrument was assessed by applying it to the unused portion of the original sample (the validation sample) and determining how accurately the instruments and the resulting risk classifications predicted the behavior of these youth.

Techniques produced similar results, but some had unique characteristics

The Report concludes that the predictive capabilities of the risk scales, which were developed using the various statistical approaches, were about the same. The authors address the differential benefits of each approach based on concerns beyond the relative validity of the prediction scores: simplicity, the ease of explaining the statistics to a nontechnical audience, and the ability to control for unwanted influences on the resulting prediction.

Risk Classification: A Comparison of Methods for Practical Application in Juvenile Courts provides the juvenile justice community and, more specifically, those charged with preparing a risk classification instrument with a guide to preparing these tools. Ideally, the Report will encourage those who were hesitant to attempt to construct risk scaling instruments and will help those who have done such work in the past to reconsider their statistical methods.

For further information

A complete copy of *Risk Classification: A Comparison of Methods for Practical Application in Juvenile Courts* by Don M. Gottfredson and Howard N. Snyder may be obtained by contacting the Juvenile Justice Clearinghouse (800–638–8736). The Report may also be downloaded in PDF format from the OJJDP Web site (ojjdp.ncjrs.org). The work was funded by OJJDP's National Juvenile Justice Data Analysis Project (grant number 1999–JN–FX–K002).

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